ABSTRACT OF THE DISCLOSURE

The invention relates to using a shift-and-add technique with a group of pre-calculated angles, such as the Coordinated Rotation Digital Computer (CORDIC) algorithm, in a hardware efficient digital carrier offset compensation loop. The implementation uses the shift-and-add technique for an efficient arctangent structure calculating phase offset errors. The implementation optionally uses the shift-and-add technique as a Numerically Controlled Oscillator (NCO) to track and compensate for a phase shift.